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Patent  
Attorney Docket No. 1000023-000072

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)	<b>MAIL STOP AMENDMENT</b>
Tadashi ISHIDA et al.	)	
Application No.: 10/522,416	)	Group Art Unit: 1774
Filing Date: January 26, 2005	)	Examiner: Betelhem SHEWAREGED
Title: INK JET RECORDING MEDIUM	)	Confirmation No.: 5645

AMENDMENT/REPLY TRANSMITTAL LETTER

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Enclosed is a reply for the above-identified patent application.

- ☐ A Petition for Extension of Time is enclosed.
- ☐ \_\_\_\_\_ Terminal Disclaimer(s) and the ☐ \$ 65 ☐ \$ 130 fee per Disclaimer due under 37 C.F.R. § 1.20(d) are enclosed.
- ☒ Also enclosed is/are: an executed Declaration Under 37 C.F.R. 1.132.
- ☐ Small entity status is hereby claimed.
- ☐ Applicant(s) requests continued examination under 37 C.F.R. § 1.114 and enclose the ☐ \$ 395 ☐ \$ 790 fee due under 37 C.F.R. § 1.17(e).
- ☐ Applicant(s) requests that any previously unentered after final amendments not be entered. Continued examination is requested based on the enclosed documents identified above.
- ☐ Applicant(s) previously submitted \_\_\_\_\_ on \_\_\_\_\_ for which continued examination is requested.
- ☐ Applicant(s) requests suspension of action by the Office until at least \_\_\_\_\_, which does not exceed three months from the filing of this RCE, in accordance with 37 C.F.R. § 1.103(c). The required fee under 37 C.F.R. § 1.17(i) is enclosed.
- ☐ A Request for Entry and Consideration of Submission under 37 C.F.R. § 1.129(a) (1809/2809) is also enclosed.

- ☒ No additional claim fee is required.
- ☐ An additional claim fee is required, and is calculated as shown below:

AMENDED CLAIMS					
	No. of Claims	Highest No. of Claims Previously Paid For	Extra Claims	Rate	Additional Fee
Total Claims	6	20	0	x \$ 50 (1202)	\$ 0
Independent Claims	1	3	0	x \$ 200 (1201)	0
<input type="checkbox"/> If Amendment adds multiple dependent claims, add \$ 360 (1203)					\$ 0
<b>Total Claim Amendment Fee</b>					<b>\$ 0</b>
<input type="checkbox"/> Small Entity Status claimed - subtract 50% of Total Claim Amendment Fee					0
<b>TOTAL ADDITIONAL CLAIM FEE DUE FOR THIS AMENDMENT</b>					<b>\$ 0</b>

- ☐ Charge \_\_\_\_\_ to Deposit Account No. 02-4800 for the fee due.
- ☐ A check in the amount of \_\_\_\_\_ is enclosed for the fee due.
- ☐ Charge \_\_\_\_\_ to credit card for the fee due. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17 and 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800. This paper is submitted in duplicate.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date November 1, 2006

By: \_\_\_\_\_

Roger H. Lee  
Registration No. 46317

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Alexandria, VA 22313-1404  
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Patent  
Attorney's Docket No. 1000023-000072

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of	)	<b>MAIL STOP AMENDMENT</b>
Tadashi ISHIDA et al.	)	
Application No.: 10/522,416	)	Group Art Unit: 1774
Filed: January 26, 2005	)	Examiner: Betelhem SHEWAREGED
For: INK JET RECORDING MEDIUM	)	Confirmation No.: 5645
	)	

**SUPPLEMENTAL REPLY AND SUBMISSION OF DECLARATION  
UNDER 37 C.F.R. §1.132**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In further response to the Official Action issued on July 3, 2006, Applicants submit the following remarks. In addition, attached for the Examiner's consideration is a Declaration Under 37 C.F.R. §1.132.

### REMARKS

Further to the Amendment filed October 3, 2006, reconsideration of the application identified in caption, pursuant to and consistent with 37 C.F.R. §1.111 and in light of the supplemental remarks which follow, are respectfully requested.

As discussed in the previously filed Amendment, U.S. Patent No. 6,361,768 (*Galleguillos et al*) does not disclose each feature recited in independent claim 1, and as such fails to constitute an anticipation of such claim. For example, *Galleguillos et al* does not disclose at least one ink receptive layer containing polymeric organic particles provided on a support, wherein the polymeric organic particles have an average particle diameter of 1 to 500 nm, as recited in claim 1.

Applicants further submit that employing the ink jet recording medium comprising at least one ink receptive layer containing polymeric organic particles having an average particle diameter of 1 to 500 nm, in accordance with an aspect of the claimed invention, can provide surprising and unexpected results, for example, in the form of improved color density characteristics. In this regard, attached for the Examiner's consideration is a Declaration Under 37 C.F.R. §1.132 of Masaya Kusumoto, hereinafter "Declaration."

In the Declaration, Comparative Experiment A was conducted to observe the effects that the particle size of the polymeric organic particles has on the color density characteristics of the resulting ink jet recording medium. The comparative polymeric organic particles were prepared in the manner discussed at pages 2 and 3 of the Declaration, and such particles had an average particle diameter of 710 nm. Thus, the average particle diameter of the comparative particles was outside the range of 1 to 500 nm recited in claim 1.

The resulting comparative ink jet recording medium was tested to observe various characteristics thereof, and such characteristics are set forth at Tables I and II of the

Declaration. As well, data for Examples 1 and 2 and Comparative Examples 1-5 set forth in the specification have been reproduced in Tables I and II of the Declaration. As can be seen from the results, Comparative Experiment A exhibited a color density of 1.78 and 1.72 for black and cyan, respectively. Such color density values are significantly lower than the color density characteristics exhibited by Example 1 (2.05 and 1.98 for black and cyan, respectively) and Example 2 (2.07 and 1.97 for black and cyan, respectively). Thus, the surprising and unexpected nature of employing polymeric organic particles having the claimed average particle diameter in an ink jet recording medium, is apparent in view of the experimental results set forth in the Declaration.

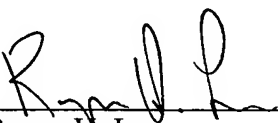
From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: November 1, 2006

By:

  
\_\_\_\_\_  
Roger H. Lee  
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UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Application of

Tadashi Ishida, et al.

Group Art Unit: 1774

Application No. 10/522,416

Examiner: BETELHEM SHEWAREGED

Filed: January 26, 2005

For: INK JET RECORDING MEDIUM

The Honorable Commissioner of Patents and Trademarks  
United States Patent and Trademark Office  
Washington, D. C. 20231

Sir:

DECLARATION UNDER 37 CFR 1.132

I, Masaya KUSUMOTO, declare and state that:

1. In March, 1990, I was graduated from Hokkaido Asahikawa Technical High-School.

Since April, 1990, I have been an employee of MITSUI Chemicals, INC., and till the present time, I have been engaged in development work in emulsion for thermosensitive recording material and for ink jet recording material.

2. I am a co-inventor of the invention described in the specification of the above-identified application.

3. The following Experiments were carried out in order to demonstrate the superiority of the presently claimed invention.

[Comparative Experiment A]

<Production of amphoteric polymeric organic particles having an anionic group and a cationic group>

600.0 parts of deionized water and 1.0 parts of water dispersion of amphoteric polymeric organic particles obtained in Example 1 of the specification were charged into a reaction vessel, and the pH of the mixture was adjusted to 2 with an aqueous hydrochloric acid solution. The reaction mixture was heated to 65°C in a nitrogen stream, and 3.0 parts of 2,2'-azobis(2-amidinopropane) dihydrochloride was added to the mixture. Separately, 120.0 parts of styrene, 135.0 parts of t-butyl methacrylate, 30.0 parts of 2-hydroxyethyl methacrylate and 15.0 parts of methacrylic acid were emulsified into 120.0 parts of deionized water in the presence of 6.0 parts of lauryltrimethylammonium chloride to thereby obtain an emulsified mixture. This emulsified mixture was dropped into the reaction vessel over a period of 4 hours. Thereafter, the mixture was maintained at the same temperature for 4 hours and then the nonvolatile content thereof was adjusted to 30% with deionized water. As a result, an aqueous composition consisting of the amphoteric polymeric organic particles having an anionic group and a cationic group dispersed in water was obtained. The aqueous composition had the nonvolatile content of 30% and the pH of 2.7. The polymeric organic particles had the average

particle diameter of 710 nm as determined by observation through an electron microscope and the glass transition temperature (T<sub>g</sub>) of 105°C.

<Production of recording sheet>

Using the above obtained aqueous composition, a recording sheet was produced in the same manner as in Example 1 of the specification.

[Evaluation]

The quality evaluation results of the recording sheets (including those of Examples 1-2 and Comparative Examples 1-5 of the specification) are listed in Tables I and II. The evaluation was conducted in the same manner as in Examples of the specification.



Table I

	Properties of polymeric organic particles			Ink absorptivity		Color density	
	Ionic property of particles	Tg of particles	Average particle diameter	Setting property	Image irregularity	Black	Cyan
Example 1	Amphoteric	105°C	70 nm	O	O	2.05	1.98
Example 2	Amphoteric	103°C	65 nm	O	O	2.07	1.97
Comparative Example 1	Cationic	103°C	70 nm	Δ	x	2.05	1.98
Comparative Example 2	Anionic	105°C	105 nm	Δ	x	1.24	1.33
Comparative Example 3	Amphoteric	16°C	68 nm	x	x	Unmeasurable	Unmeasurable
Comparative Example 4	Amphoteric	93°C	80 nm	Δ	Δ	1.88	1.82
Comparative Example 5	Amphoteric	(MFT 9°C)	200 nm	x	x	Unmeasurable	Unmeasurable
Comparative Experiment A	Amphoteric	105°C	710 nm	O	O	1.78	1.72

MFT: Minimum film-forming temperature

Table II

	Gloss	Water resistance	Light fastness	Yellowing resistance
Example 1	63	O	84%	1.1
Example 2	59	O	85%	1.1
Comparative Example 1	53	O	85%	1.1
Comparative Example 2	54	x	64%	1.2
Comparative Example 3	50	Unmeasurable	Unmeasurable	Unmeasurable
Comparative Example 4	52	O	48%	1.8
Comparative Example 5	47	Unmeasurable	Unmeasurable	Unmeasurable
Comparative Experiment A	54	O	85%	1.1

4. From the results of the above experiment, by using the amphoteric polymeric organic particles having the average particle diameter of the range from 1 to 500 nm, there can be obtained an ink jet recording medium which is more excellent in color density.

The undersigned declares further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,

Masaya Kusumoto  
Masaya KUSUMOTO

This 19th day of September, 2006